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ASCE 1985 Salary Survey

By the Committee on Employment Conditions
of the Professional Practice Division

Abstract: The biennial salary survey of the civil engineering profession conducted by the Committee on Employment Conditions of ASCE during the fourth quarter of 1985 is presented. Results are analyzed on the basis of ASCE professional grades for consulting firms, construction firms, and design/construction firms, and compared against 1979–1983 survey data.

Introduction

Periodic salary surveys are useful tools for both employers and employees. ASCE has recognized this since 1914, when it published its first-known salary survey. The society continued to conduct surveys at varying intervals until 1950, when the survey became a scheduled, biennial project. This report is for the 18th ASCE Salary Survey in that biennial series. The Committee on Employment Conditions (COEC) has been charged with conducting the periodic salary surveys since the committee was established in 1971, in conformance with society bylaws to "collect, codify, and prepare for distribution such data as may be calculated to be of value to civil engineers, both employers and employees, in connection with proper classification of engineering positions and equitable compensation for services. . . ."

Salary survey questionnaires are sent to employers during the third or fourth quarter of odd-numbered years, and the data collected represent, therefore, salary and benefit conditions for that period. This report is for the fourth quarter of 1985. Salary data were collected and analyzed based on ASCE professional grades for six employment categories. The employment categories included in this report are consulting firms, construction firms, and design/construction firms. Past COEC salary surveys also contained categories for railroads, utilities and industries; state government departments and agencies; and municipalities, counties and regional authorities. Because of a significant imbalance in the relative number of responses in the categories surveyed, the latter three categories were not included in the 1985 survey. The inclusion of this limited number of additional responses, which represented 4.2% of the total responses received, would have distorted the results and reduced the value of the data contained herein. All comparisons to the 1983 Salary Survey are based on 1983 data for consulting firms, construction firms, and design/construction firms only. Federal agencies were not surveyed since most federal salaries and benefits are standardized by the Civil Service Commission and are a matter of public record.

The request for an average annual salary, in addition to an entrance and maximum salary (for each of the eight employment categories) was

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added to the 1985 Salary Survey questionnaire. The inclusion of this data made possible the calculation of a middle 50% salary range and a 95% salary range for the average annual salary, replacing the "Middle Range" and "Total Range" for entrance and maximum salaries used in previous surveys. The average (mean) salary, median salary, and percent change from previous surveys are retained for the entrance and maximum rates to permit comparisons to past surveys.

Summary of Findings

This summary presents some of the more important data and its analysis, as developed from this survey.

The 1985 Salary Survey is based on responses received from 632 organizations representing 7,434 employees. A breakdown of these responses is shown in Table 1. By comparison, the 1983 survey (for these three categories), contained responses from 441 organizations representing 7,877 engineers.

In the two-year period since the 1983 survey, the average combined median entrance salary for all grades increased 7.6% to $36,461. This statistic is computed from the average median entrance salary for each professional grade from I/II through IX in each of three employment categories, and is a good trend indicator. Construction and design/construct firms were combined into one category for computational purposes so that a comparison with 1983 and prior results could be made, as the categories were not divided prior to the 1981 survey. Additional data on entrance salaries are presented in Tables 2 to 4. By categories of employment, the average median entrance salaries and the percentage increase from 1983 are shown in Table 2. A trend analysis of the same categories and median salaries over a six-year period (1981, 1983 and 1985 Salary Surveys) is noted in Table 3.

Additional analyses conducted include a look at entrance, average annual and maximum salaries by employment categories. Furthermore, the "spread" of these salaries is also shown, where the "middle 50% range" represents the average annual salary +/− 0.175 standard deviations from this mean, and the '95% range" represents the average annual salary +/− 2 standard deviations from this value. A breakdown of entrance salaries, annual salaries and maximum salaries can be found in Table 12.

Starting salaries for those entering the profession in ASCE professional grades I/II for each of the employment categories are shown in Table 4. The average starting salary was $19,498, a 5.3% increase over

TABLE 1.—Number of Responses by Employment Category

Employment category (1)	Number of organizations (2)	Number of individuals (3)
Private employer		
Consulting firms	588	7,040
Construction firms	11	27
Design/construct firms	33	367
Total	632	7,434

TABLE 2.—Percent Increase of Averaged Median Entrance Salaries by Employment Category for All Grades

Employment category (1)	Average median entrance salary for 1985 (dollars) (2)	Percent increase over 1983 (3)
Consulting firms	36,350	8.1
Construction firms	36,314	3.2
Design/construct firms	38,454	11.4

TABLE 3.—Percent Increase of Averaged Median Salaries by Employment Category between 1981 and 1985 for All Grades

Employment category (1)	Percent Increase of Averaged Median Entrance Salary Over Prior Report Period			1981–1985 total percent of increase (5)
	1981 (2)	1983 (3)	1985 (4)	
Consulting firms	23.7	6.5	8.1	42.4
Construction firms	24.0	7.8	3.2	37.9
Design/construct firms	—	2.7	11.4	14.4[a]
Average	23.9	5.7	7.6	40.9

[a]1983–1985.

TABLE 4.—1985 Starting Salaries, Grade I/II

Employment category (1)	Mean starting salary (dollars) (2)	Ranges of Starting Salaries (dollars)		Median starting salary (dollars) (5)	Percent increase in median salary over 1983 (6)
		Low (3)	High (4)		
Consulting firms	19,919	8,000	29,600	20,000	7.2
Construction firms	18,195	14,390	22,000	18,195	1.1
Design/construct firms	20,197	16,572	23,322	20,300	7.4
Average	—	—	—	19,498	5.3

1983, as compared to an increase of 0.9% between 1981 and 1983.

Regional comparisons of median salaries by professional grades are included (Fig. 1). In the regional analysis, the average regional median starting salary (Grades I/II) irrespective of employment category was $20,000. A breakdown of this analysis can be found in Table 8.

A survey of benefits revealed that the trend of increasing fringe benefits was on the decline. The overall average cost of fringe benefits as a percentage of the base payroll was reported to be 32.7% versus 34.3% in 1983. Table 5 reviews the trend in fringe benefits for the decade. For comparison purposes, the report of benefit costs by employment categories is shown in Table 6.

FIG. 1.—Map of Regions Used for Comparative Purposes

General trends in fringe benefits can be seen from the overall average costs of various benefits, as reported in Table 7. The trend assessment in the right column suggests that social security, professional dues, education and separation allowances have tended to increase over both comparison periods, while the remaining benefits, although increasing, have not done so consistently.

Although 41% of all organizations have an understanding with em-

TABLE 5.—Average Overall Benefit Cost, as a Percent of Base Payroll for the Decade 1975–1985

Percent of Base Payroll					
1975 (1)	1977 (2)	1979 (3)	1981 (4)	1983 (5)	1985 (6)
28.97	34.40	36.51	38.94	34.30	32.68

TABLE 6.—Average Fringe Benefit Cost, as a Percent of Base Payroll by Employment Category

Employment category (1)	Fringe Benefit Cost as a Percentage of Base Payroll			Change in percent (increase) 1981–1985 (5)
	1981 (2)	1983 (3)	1985 (4)	
Consulting firms	36.8	33.0	32.9	−0.1
Construction firms	50.7	39.5	32.0	−7.5
Design/construct firms	47.5	28.2	29.0	+0.8

TABLE 7.–Average Cost of Various Benefits as a Percent of Base Payroll of All Employment Categories

Benefit (1)	Fringe Benefit Cost as a Percentage of Base Payroll			Increase (+) or Decrease (−)	
	1981 (2)	1983 (3)	1985 (4)	1981–1983 (5)	1983–1985 (6)
Vacation	5.04	5.17	4.67	+	−
Holidays	3.21	3.32	3.07	+	−
Sick leave	3.06	3.15	2.84	+	−
Military leave	1.39	1.60	1.30	+	−
Incentive compensation	10.03	7.55	8.81	−	+
Retirement	9.63	8.13	7.36	−	−
Social security	8.37	8.59	9.46	+	+
Professional dues	1.32	1.34	1.41	+	+
Insurance, medical	4.61	5.12	4.65	+	−
Insurance, life	2.01	1.53	1.76	−	+
Education	0.89	1.07	1.10	+	+
Separation allowance	2.00	2.40	2.92	+	+
Other	3.60	3.63	4.01	+	+

ployees about their professional grade classification, only about 20% say they use the ASCE grade descriptions in the organization. Over the last several surveys, a slow but steady increase has been observed in the percentage of organizations that have established some type of classification system.

TABLE 8.—Regional Relationships (Ratio of Regional to National Entrance Salary Medians for Combined Employment Categories[a] in Each ASCE Grade)

Region (1)	Grades							
	I/II (2)	III (3)	IV (4)	V (5)	VI (6)	VII (7)	VIII (8)	IX (9)
Northeast	17,000	22,400	24,960	30,000	36,000	39,390	51,000	60,112
	0.85	0.93	0.86	0.90	0.92	0.91	1.02	1.13
Middle Atlantic	20,000	22,100	28,000	33,000	38,713	44,000	50,400	50,440
	1.00	0.92	0.96	0.99	0.99	1.01	1.01	0.95
Middle West	20,400	24,100	28,000	32,000	36,620	40,000	46,000	50,000
	1.02	1.00	0.96	0.96	0.92	0.92	0.92	0.94
Southern	20,000	22,500	30,000	34,000	38,000	44,006	50,000	50,280
	1.00	0.94	1.03	1.02	0.97	1.01	1.00	0.95
Plains	20,000	24,000	30,000	34,750	40,000	45,000	55,000	67,172
	1.00	1.00	1.03	1.04	1.03	1.04	1.10	1.27
Western	20,800	25,000	30,000	35,000	40,000	43,382	57,000	55,000
	1.04	1.04	1.03	1.05	1.03	1.00	1.14	1.04
Foreign	24,000	26,400	37,500	34,150	51,000	54,000	57,000	56,700
	1.20	1.10	1.29	1.03	1.31	1.24	1.14	1.07
Overall median dollars	20,000	24,000	29,029	33,280	39,000	43,382	50,000	53,000

[a]The employment categories outlined elsewhere in the report are combined for each grade in each region. All medians shown are expressed in annual dollars. Ratio formula is overall, in dollars divided into regional median, in dollars equals quotient in decimal.

1. Sampling Procedure

As in previous years, the data presented in this report were obtained from representative sources on a sampling basis. Questionnaires were mailed to 10,400 employers in January, 1986, based on ASCE's membership database, sorted to eliminate duplicates. A 6% return was achieved after rejected questionnaires were eliminated. Responses are not necessarily uniform or representative of the entire profession. Some regional responses may be statistically invalid. Overall, median salary data obtained in this manner in the past by ASCE Salary Surveys have correlated well with median salary information provided by a large sample of ASCE members responding to the Society's periodic "Survey of the Professions." The data in this survey report are solely indicators of current salary and benefit levels at the time the survey was conducted—and should not be considered as recommended salary and benefits levels.

2. Professional Grade Descriptions

ASCE's professional grade descriptions were used as the basis for determining expertise or level of responsibility for comparison of salaries in the survey, rather than years of experience. The grade descriptions have been used by ASCE for this purpose for a number of years. The system now in use is as revised in 1975 by ASCE's COEC and the National Society of Professional Engineer's (NSPE) Professional Employment Committee, working jointly. The resulting system is compatible with NSPE classifications and correlates with federal "G.S." grades, so data reported in this survey can be compared easily with NSPE surveys and the Department of Labor's Bureau of Labor Statistics information.

TABLE 9.—Consulting Firms—Annual Salaries (Dollars)

ASCE grade (1)	Number of individuals (2)	ENTRANCE RATES			MAXIMUM RATES			AVERAGE SALARY RATES					
		Average salary (3)	Median salary (4)	Change from 1983–1985 median (%) (5)	Average salary (6)	Median salary (7)	Change from 1983–1985 median (%) (8)	Mean average salary (9)	Standard deviation (10)	Middle 50% Range		95% Range	
										Low (11)	High (12)	Low (13)	High (14)
I/II	1,137	19,919	20,000	+7.2	25,322	25,000	+8.7	23,148	5,039	22,266	24,030	13,070	33,226
III	1,003	25,141	24,000	+6.4	29,918	30,000	+9.2	28,059	4,715	27,234	28,884	18,629	37,489
IV	1,058	29,261	29,220	+12.4	31,312	35,000	+9.4	33,227	7,402	31,932	34,522	18,423	48,041
V	1,129	33,768	33,280	+10.9	41,296	40,000	+6.8	38,459	6,960	37,231	39,677	24,539	52,379
VI	979	39,014	39,068	+11.6	47,593	46,000	+9.5	43,430	9,216	41,817	45,043	24,998	61,862
VII	773	44,965	43,200	+8.0	57,619	51,120	+2.8	49,762	17,959	46,619	52,905	13,844	85,680
VIII	483	51,087	50,000	+10.2	63,825	60,000	+3.8	56,226	21,027	52,546	59,906	14,172	98,280
IX	478	59,361	52,032	+1.0	74,552	70,000	0.0	64,622	24,471	60,340	68,904	15,680	113,564
Average			36,350			44,640							

Comments on Data, Analysis, and Presentation

The data contained in this survey are presented in two modes. For historical comparisons the average (mean) entrance and/or maximum salaries are used to compare data for 1985 to 1983 survey results (Tables 9–12), and median salaries are used for longer term (1977–1985) trend comparisons (Figs. 2–5).

For the current 1985 survey data, average annual salaries were obtained, which enables a statistical determination of the distribution of the average salary within any job classification or employment category. This distribution is described in terms of the middle 50% range (mean of the average annual salary +/− 0.175 standard deviations) and the 95% range (the mean of the average annual salary +/− 2 standard deviations).

TABLE 10.—Construction Firms—Annual Salaries (Dollars)

ASCE grade (1)	Number of individuals (2)	ENTRANCE RATES			MAXIMUM RATES			AVERAGE SALARY RATES					
		Average salary (3)	Median salary (4)	Change from 1983–1985 median (%) (5)	Average salary (6)	Median salary (7)	Change from 1983–1985 median (%) (8)	Mean average salary (9)	Standard deviation (10)	Middle 50% Range		95% Range	
										Low (11)	High (12)	Low (13)	High (14)
I/II	4	18,195	18,195	+1.1	25,585	25,585	+11.2	28,331	5,332	27,398	29,264	17,667	38,995
III	7	23,935	24,000	+4.3	30,837	30,000	+5.3	25,400	4,586	24,597	26,203	16,228	34,572
IV	2	27,191	27,191	0.0	38,431	35,000	0.0	38,750	7,126	37,503	39,997	24,498	53,002
V	6	29,873	30,000	−1.3	43,053	43,053	+7.6	38,346	1,644	38,058	38,634	35,058	41,634
VI	4	40,873	37,599	+12.2	52,518	52,518	+11.7	51,259	9,335	49,625	52,893	32,589	69,929
VII	2	47,215	47,215	+16.6	59,880	59,880	+8.9	53,000	5,786	51,987	54,013	41,428	64,572
VIII	0	—	—	—	—	—	—	—	—	—	—	—	—
IX	2	70,000	70,000	+18.8	95,000	95,000	+41.1	82,500	17,500	79,438	85,563	47,500	117,500
Average		36,314				48,719							

TABLE 11.—Design/Construct Firms—Annual Salaries (Dollars)

ASCE grade (1)	Number of individuals (2)	ENTRANCE RATES			MAXIMUM RATES			AVERAGE SALARY RATES					
		Average salary (3)	Median salary (4)	Change from 1983–1985 median (%) (5)	Average salary (6)	Median salary (7)	Change from 1983–1985 median (%) (8)	Mean average salary (9)	Standard deviation (10)	Middle 50% Range		95% Range	
										Low (11)	High (12)	Low (13)	High (14)
I/II	25	20,197	20,300	+6.9	25,990	25,444	+3.9	25,456	3,846	24,783	26,129	17,764	33,148
III	41	23,422	24,000	+14.3	28,753	28,000	−0.6	27,455	5,938	26,416	28,494	15,579	39,331
IV	67	28,345	28,200	−0.8	37,593	37,440	+15.2	35,560	4,885	34,705	36,415	25,790	45,330
V	81	34,255	34,268	+7.1	42,226	44,000	+15.2	38,798	6,093	37,732	39,864	26,612	50,984
VI	53	26,918	38,000	+10.3	45,127	47,250	+19.6	45,589	7,213	44,327	46,851	31,163	60,015
VII	61	42,201	45,000	+12.5	52,185	50,000	−7.0	54,280	7,982	52,883	55,677	38,316	70,244
VIII	19	53,284	56,186	+26.9	68,968	64,500	+29.0	63,103	8,276	61,655	64,551	46,551	79,655
IX	20	57,845	61,680	+8.3	73,382	64,400	−3.2	67,423	26,067	62,861	71,985	15,289	119,557
Average			38,454			45,129							

1. Salary Trends

From Table 3, it can be seen that the biennial percent increases of the median salaries have been tending downwards. Previously reported median COEC Salary Survey figures for 1975 through 1979 ranged from 13.6% to 19.9%. The large percent increase found by the 1981 survey is believed to reflect both the continued high inflation rate through 1980–1981, and a relatively strong demand for civil engineers. The signs of

TABLE 12.—Combined Grades—Annual Salaries (Dollars)

ASCE grade (1)	Number of individuals (2)	ENTRANCE RATES: Average salary (3)	ENTRANCE RATES: Median salary (4)	ENTRANCE RATES: Change from 1983–1985 median (%) (5)	MAXIMUM RATES: Average salary (6)	MAXIMUM RATES: Median salary (7)	MAXIMUM RATES: Change from 1983–1985 median (%) (8)	AVERAGE SALARY RATES: Mean average salary (9)	Standard deviation (10)	Middle 50% Range: Low (11)	Middle 50% Range: High (12)	95% Range: Low (13)	95% Range: High (14)
I/II	1,166	19,912	20,000	+7.2	25,340	25,000	+8.6	23,231	5,026	22,351	24,111	13,179	33,283
III	1,051	23,891	24,000	+7.0	29,883	30,000	+8.8	28,018	4,779	27,182	28,854	18,460	37,576
IV	1,127	29,205	29,029	+11.6	35,987	35,000	+9.7	33,375	7,329	32,092	34,658	18,717	48,033
V	1,216	33,740	33,280	+10.6	41,371	40,000	+7.4	38,481	6,878	37,277	39,685	24,725	52,237
VI	1,036	38,951	39,000	+11.5	47,547	46,000	+10.0	43,783	8,959	42,215	45,351	25,865	61,701
VII	836	44,853	43,382	+8.3	57,390	51,210	+2.1	50,099	17,591	47,021	53,177	14,917	85,281
VIII	502	51,197	50,000	+10.8	64,109	60,000	+4.8	56,486	20,689	52,865	60,107	15,108	97,864
IX	500	59,394	53,000	+1.4	74,756	70,000	0.0	64,805	24,578	60,504	69,106	15,649	113,961
Average			36,461			44,651							

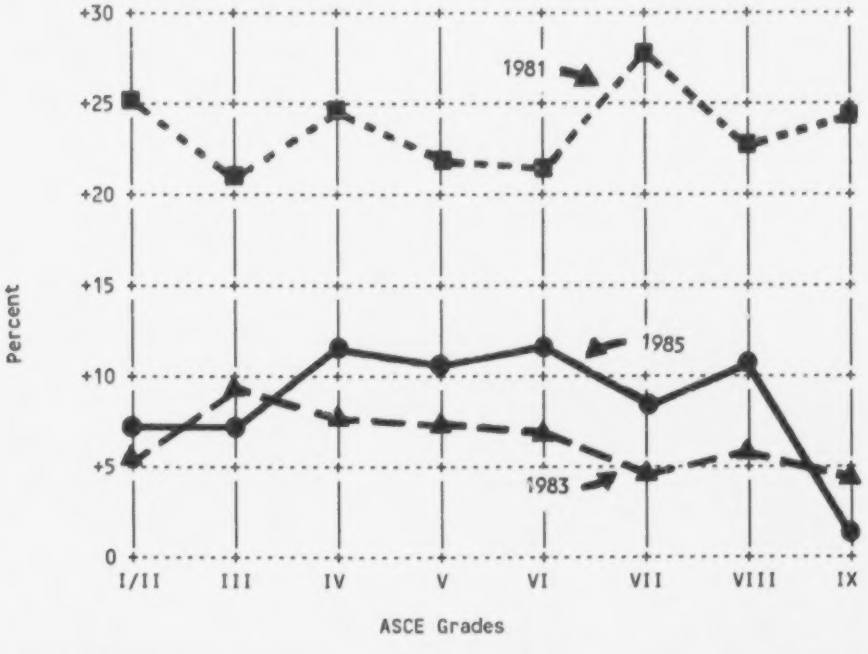

FIG. 2.—Change in Entrance Salary Medians for Combined Employment Categories, 1981–1985

the abatement of the 1982–83 recession are evident in a comparison of the 1983 and 1985 values.

The starting salaries for entrance level (Grade I/II) engineers in Table 4 appear to be increasing, in line with the median entrance level for all grades as shown in Table 3.

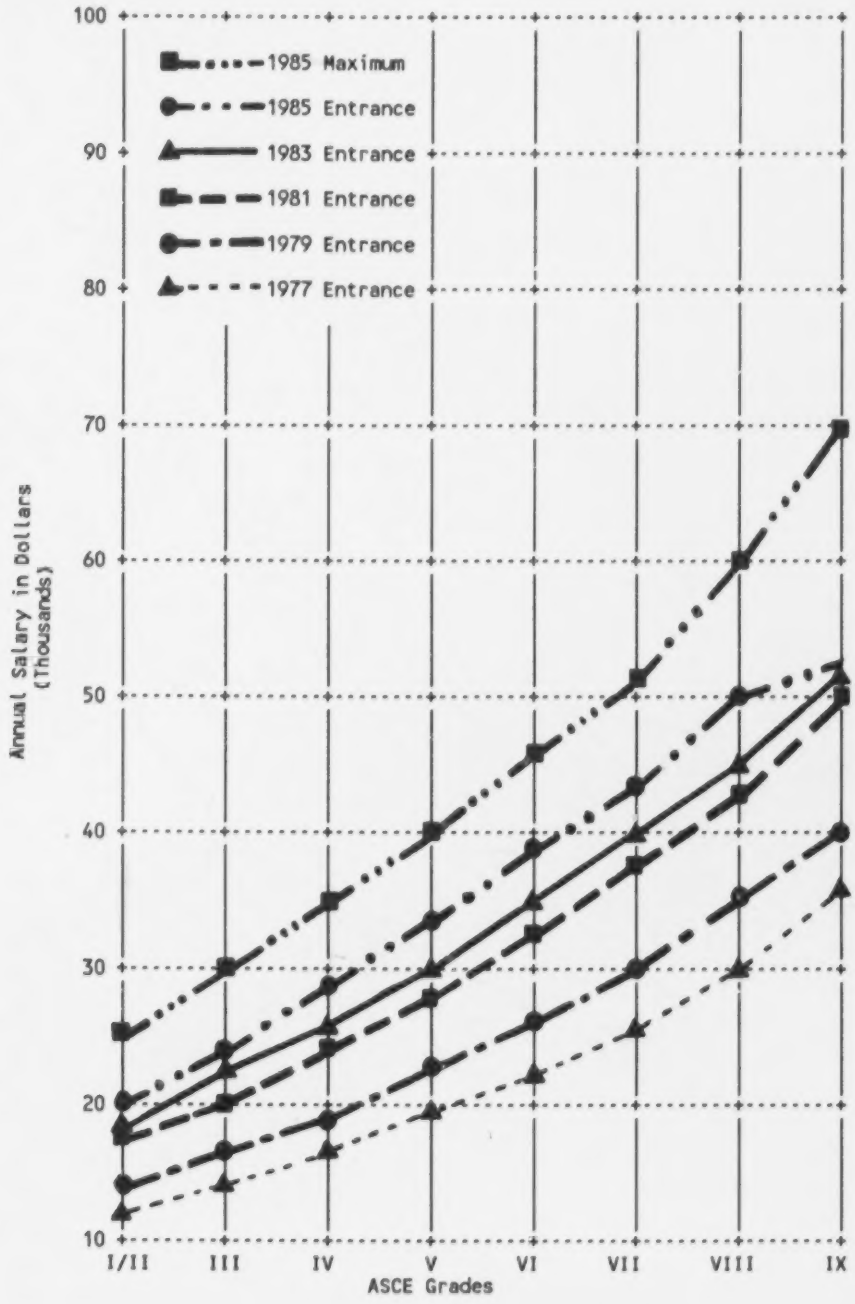

FIG. 3.—Median Salary Rates: Consulting Firms

2. Job Classification

Tables 9–12 indicate that for entry-level grades and middle-tier salaries, the determination of a standard deviation appears to present a valid statistical tool for determining the degree of skewing of the salaries within an ASCE grade classification.

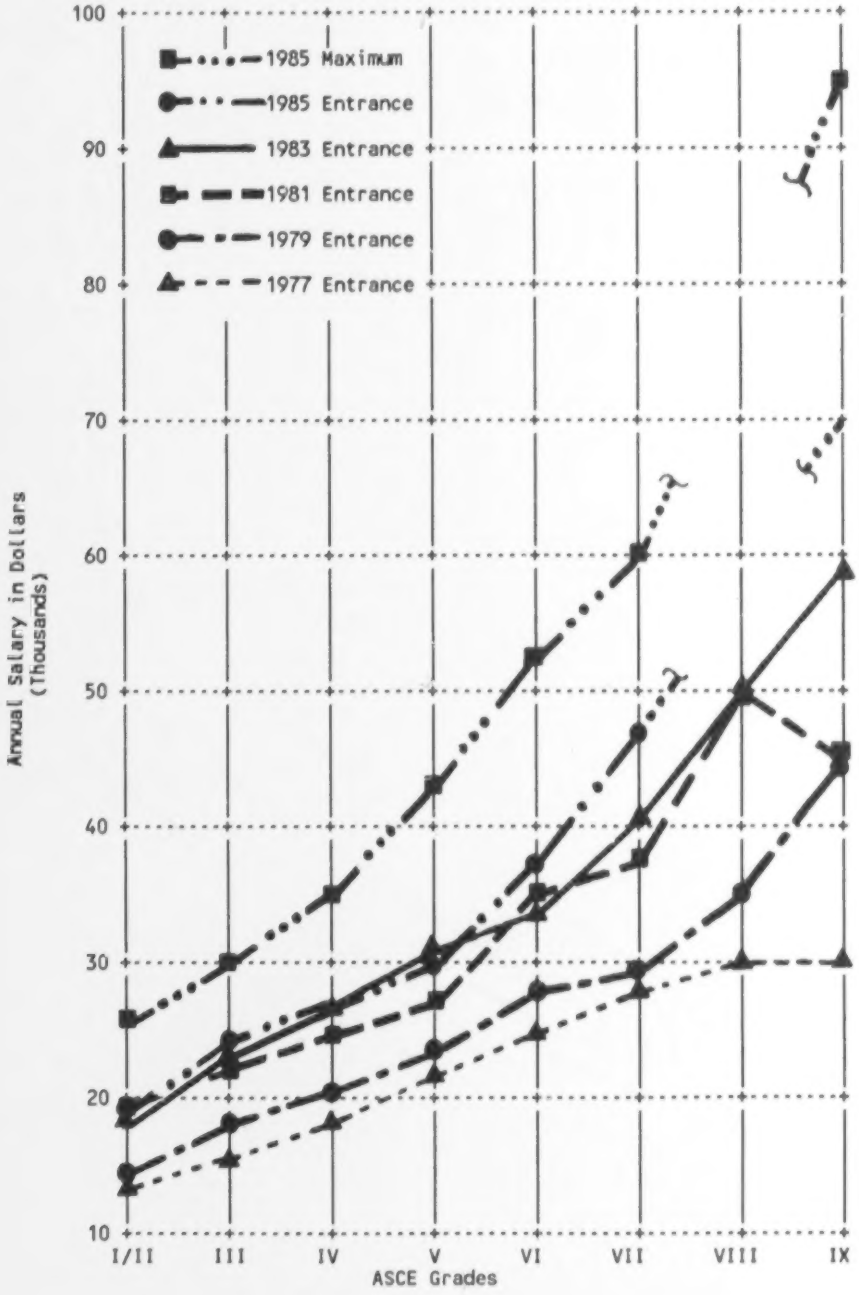

FIG. 4.—Median Salary Rates: Construction Firms

An inherent limitation of the survey is that many employers who responded have grade classifications which differ from the ASCE professional grades, or have no formal classification system. Interpretation and interpolation are necessary for these employers to categorize their engineer employees according to the ASCE grade for this report. Although

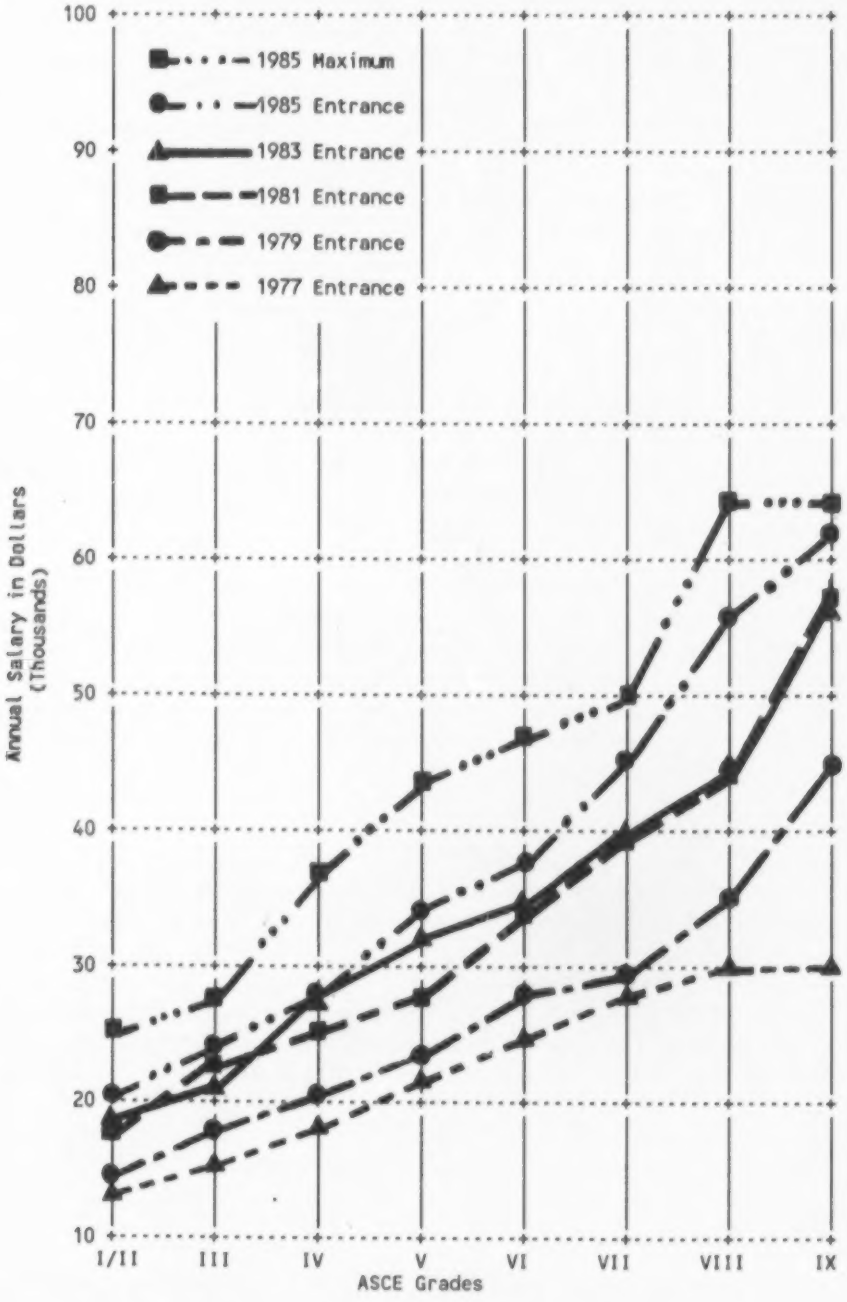

FIG. 5.—Median Salary Rates: Design/Construct Firms

TABLE 13.—Educational Background of Employees

Category (1)	B.S. degree (2)	Number of employers (3)	M.S. degree (4)	Number of employers (5)	Ph.D. degree (6)	Number of employers (7)
Consulting firms	4,049	483	1,808	358	295	99
Construction firms	24	8	5	2	—	—
Design/construct firms	259	26	120	21	11	4

TABLE 14.—Professional Registration

Category (1)	Number of P.E. (2)	Number of employers (3)	Number of EIT (4)	Number of employers (5)
Consulting firms	3,932	534	1,187	336
Construction firms	7	5	12	8
Design/construct firms	258	31	64	16

this has a minimal impact on the average salary values, it tends to significantly increase the variance and spread of the 50% and 95% ranges at the higher professional grade levels (i.e., ASCE Grades VII–IX), where the likelihood of such a misinterpretation of grade levels is greater and the number of individuals surveyed is less.

3. Benefits

While Table 5 shows that the overall benefits as a percentage of base payroll has remained relatively constant for the decade from 1975–1985, Table 7 shows that the distribution of these benefits varies considerably. Social security, unemployment and workmen's compensation are taxes or insurance required by law, not optional benefits, but have historically been included on the list.

4. Educational Background

The data on educational and professional background in Tables 13 and 14 are provided for informational purposes only. No attempt was made to correlate this information with salaries or any other category.

5. Regional Analysis

Overall median salaries are presented on a regional basis in Table 8. The regions used were defined elsewhere and are shown in Fig. 5. Although no definitive results can be determined based on the data collected, the Northeast region usually has the lowest median salary in most of the grades, and the foreign category the highest salary in most grades. The data are far too limited for these results to be conclusive.

Related Reference Sources

In the middle of even-numbered years the Engineering Manpower Commission of the American Association of Engineering Societies (formerly the Engineers Joint Council) collects basic salary information on

engineering graduates for its biennial reports on the "Professional Income of Engineers." This report correlates salary with the number of years since receipt of the B.S. degree, rather than with grade descriptions. NSPE conducts periodic salary surveys based on professional grade descriptions. The College Placement Council conducts an annual survey of starting salary offers to bachelor's degree candidates in civil engineering. Annual salary data are available from the Bureau of Labor Statistics from its National Survey(s) of Professional, Administrative, Technical, and Clerical Pay. The Scientific Manpower Commission periodically publishes "Salaries of Scientists, Engineers, and Technicians," collected from a variety of sources. Also, private firms conduct salary research. Many of these surveys are conducted at regular intervals using similar formats each time, so that data can be compared from period to period and trends determined.

ASCE's Manual 55, Guide to Employment Conditions for Civil Engineers, contains recommended salary ranges based on multiples of starting salaries for the various ASCE professional grades. In accordance with the recommendations in Manual 55, many ASCE sections and branches conduct annual local salary surveys to establish a current base entrance salary along with adjustment indices for their areas to use with the Manual 55 salary curves. This listing is not intended to be complete, but does serve to illustrate other sources of salary information to compare with or supplement this report.

Acknowledgment

The number of employer responses and the corresponding large sample of employees represented in this report are due in part to the recently implemented national ASCE membership database and the efforts of local ASCE members in studiously completing the salary survey questionnaire. Their work is vital to the success of the survey.

The COEC is grateful to all who supplied the basic data that made this report possible. The continued heavy demand for copies of the ASCE salary survey is evidence of the usefulness of these periodic analyses to civil engineering employers and employees alike. We are pleased to be able to help with this service and would appreciate suggestions and comments for improvements in future surveys.

Members of the Committee on Employment Conditions of ASCE include Donald C. Wright, Chairman, J. Edward Doyle, Kevin K. Eagan, Albert A. Fazio, Will M. Heiser, Contact Member Professional Practice Division Executive Committee (PRODEX), Carl M. Hirsch, Thomas J. Mudd, Michael Riddiford, Theodore J. Spetnagel, and Barry F. Winkler. Corresponding members include Harold R. Clemmer, Oscar R. George, Michael S. Kearns, Tarek S. Khan, Dennis R. Martinson, and Joyce A. Padgett.

APPENDIX I.—QUESTIONNAIRE

1985 ASCE SURVEY OF CIVIL ENGINEERING SALARIES

Name of Organization _____

Address _____

City _____ State _____ Zip ☐☐☐☐☐

General nature of business _____

Name and title of respondent _____

Is the above information different from the mailing label? Yes ___ No ___

Have you received more than one copy of this survey? Yes ___ No ___
(If yes, please attach both (all) mailing labels.)

INSTRUCTIONS

1. Please refer to the ASCE Professional Grade Descriptions* (copy enclosed) and assign each engineering position in your organization to the appropriate ASCE Grade. The relationship between U.S. Civil Service Grades and ASCE Grades is shown in Table I of the enclosure. If a particular GRADE DOES NOT APPLY to your organization ENTER "X" under annual salary and number of employees. If at this time there are NO EMPLOYEES IN A PARTICULAR GRADE for which a SALARY RANGE is PROVIDED enter "0" under number of employees.
2. Report data in terms of *ANNUAL BASE SALARY* only. Monthly or weekly rates should be converted to annual salary. (Do not include items such as bonuses, profit sharing, etc.)
3. Round salary and incentive compensation to NEAREST WHOLE DOLLAR. If no incentive compensation enter "0".

QUESTIONNAIRE — PART I, SALARY DATA

1. Please indicate which of the major employment categories listed below best applies to your organization by putting the appropriate number in the box to the right ..... ☐

   1. Consulting
   2. Construction
   3. Design/Construction
   4. Industry, Railroad or Utility
   5. State Department or Agency
   6. Municipality or County
   7. Education: 9-10 months
   8. Education: 11-12 months

2. Please enter the appropriate State Code for your office location from the back of the ASCE Professional Grade Descriptions enclosed ..... ☐
   Geographic distribution is important to the survey. If reporting for more than one location please fill out a form or copy thereof for each.

3.

ASCE Professional GRADE*	ANNUAL BASE SALARY ($) (not monthly or weekly rate) RANGE ENTRANCE	AVERAGE(1)	MAXIMUM	Number of EMPLOYEES IN GRADE (if none, enter 0)	$ VALUE OF INCENTIVE COMPENSATION IN 1985 (Bonuses and or Profit sharing)
I-II	$	$	$	$	$
III	$	$	$	$	$
IV	$	$	$	$	$
V	$	$	$	$	$
VI	$	$	$	$	$
VII	$	$	$	$	$
VIII	$	$	$	$	$
IX	$	$	$	$	$

(1) AVERAGE salary of all employees in the indicated ASCE GRADE

PART II, SALARY RELATED BENEFITS

Over the years numerous non-salary benefits have become a significant complement to annual base salary in making up total compensation. Therefore, it is essential to consider both when making a comparison or evaluation. For this reason, we ask that you INDICATE THE APPROXIMATE PERCENT of your ANNUAL BASE PAYROLL[2] represented by each of the benefit items listed below.

It is not necessary to provide detailed descriptions or pinpoint accuracy. We just need a good general picture in terms of approximate percentages that can be easily tabulated. For "Retirement", "Insurance" and other similar benefits, INDICATE ONLY THE ANNUAL CONTRIBUTION MADE BY THE ORGANIZATION for the benefit of the employee. If benefit is given, but percentage is not available, enter "N.A." If benefit is not given, enter "0."

	PERCENTAGE[3] OF ANNUAL BASE PAYROLL	COMMENTS
1. *Vacation*	_____%	_____
2. Holidays	_____%	_____
3. Sick Leave	_____%	_____
4. Military Leave and Jury Duty	_____%	_____
5. Incentive Compensation (1985)	_____%	_____
6. Retirement Income and Deferred Profit Sharing (ESOP, SRP, TRASOP, etc.)	_____%	_____
7. Social Security, Unemployment and Workmen's Compensation Taxes	_____%	_____
8. Professional Dues, Licenses and Meetings	_____%	_____
9. Insurance — medical	_____%	_____
10. Insurance — life	_____%	_____
11. Education	_____%	_____
12. Separation Allowance	_____%	_____
13. Other — including vehicle, parking, etc.	_____%	_____

(2) Annual Base Payroll is defined as base payroll (combined salaries) for 52 weeks, and does not include overtime or incentive compensation (bonuses and/or profit sharing).

(3) Use decimals for fractions of a percent — i.e., 2.50%.

GENERAL INFORMATION

The following questions refer to MANUAL 55 "ASCE GUIDE TO EMPLOYMENT CONDITIONS FOR CIVIL ENGINEERS." This publication has been widely distributed by the Society in an attempt to inform its members, employers and employees alike, of reasonably acceptable personnel management practices and to provide a common basis for communication, cooperation and mutual understanding. We are interested in learning your reaction to this publication.

As with other portions of the questionnaire, individual responses to the following questions WILL BE KEPT CONFIDENTIAL.

	Yes	No
1. Are you familiar with ASCE Manual 55?	☐	☐
If yes, how do employment conditions in your organization compare with recommendations in each section of Manual 55? (Answer for each section) 1. Better 2. Similar 3. Not as Good 4. No opinion		
Section 1 — Professional Employment	☐	
Section 3 — Recommended Salary Ranges	☐	
Section 4 — Recommended Benefits	☐	

	Yes	No
2. Have you come to an understanding with your employees on their Professional Grade Classification?	☐	☐
Do you use the ASCE Professional Grade Descriptions?	☐	☐

3. How many engineers in your employ have as their highest degree a BS _____? an MS _____? a Ph.D. _____?

4. How many are registered Professional Engineers _____? EIT's _____?

5. Have you used previous ASCE Salary Survey Reports? Yes _____ No _____

6. If so, do you think the data is representative of the profession? Yes _____ No _____

7. Was this questionnaire easy to understand? Yes _____ No _____

8. Recommendations for changes in future salary survey questionnaires:

_____

_____

THANK YOU FOR YOUR COOPERATION
PLEASE BE SURE TO RETURN THIS QUESTIONNAIRE BEFORE FEBRUARY 7, 1986
in the self-addressed envelope provided

ASCE will provide a copy of Manual 55 (regular price $7.00) at a discount of 50% to those who respond to this questionnaire. If you wish to take advantage of this offer, or order additional reprints of the Salary Survey Report, just fill out the order form below, enclose check for the appropriate amount and return with questionnaire to R.L. Whipple, c/o ASCE.

PLEASE FORWARD TO:

_____
Name Title ASCE ID#

_____
Firm or Agency

_____
Address City State Zip

_____ copies of ASCE Salary Survey Report (ASCE member price $2.00, non-member price $4.00 per copy) _____

_____ copies of ASCE Manual 55 (discount price $3.50 per copy) _____

Total _____

To allow time for data processing and report preparation, delivery of this order is scheduled for July 1, 1986.

Appendix II.—ASCE Professional Grade Descriptions

The purpose of these grade descriptions is to enable employers and employees to ascertain an individual's professional grade. The system can also be a helpful tool for encouraging engineers to improve their ability so as to qualify for higher grades and to facilitate agreement between the employer and the employee regarding each engineer's level of responsibility.

These grade descriptions are compatible with those of the U.S. Department of Labor, Bureau of Labor Statistics (BLS) and of the National Society of Professional Engineers (NSPE). It must be stressed that the grade descriptions are intended to cover the requirements of a wide range of typical engineering organizations but cannot possibly fit all. Many employers may not have the full range of positions listed. Table #1 (on the back page) indicates Federal G.S. equivalents with ASCE grades.

Descriptions should be considered as typical characteristics of a particular grade, rather than as desirable or minimum requirements. For example, it is expected that in many areas of practice, such as research and development, individuals filling middle or higher level positions would routinely have graduate degrees, though this is not indicated. All descriptive matter should be considered when a position is being evaluated. Literal conformance with every item in the descriptions is not necessary when there is a preponderance of evidence that the person measures up to the intended level of competence and responsibility.

Suitable professional recognition and salary scales should be provided for the engineer who selects the technical path for advancement so that he may achieve the same or greater professional and economic status as the engineer who advances along the management path. The grade descriptions include language applicable to both.

Many positions may require an advanced degree. There also may be cases where individuals holding engineering positions have degrees in certain scientific or other closely related fields.

ASCE PROFESSIONAL

	Engineer I/II	Engineer III	Engineer IV	Engineer V
General Characteristics	This is the entry level for professional work. Performs assignments designed to develop professional work knowledge and abilities, requiring application of standard techniques, procedures, and criteria in carrying out a sequence of related engineering tasks. Limited exercise of judgment is required on details of work and in making preliminary selections and adaptations of engineering alternatives.	Independently evaluates, selects, and applies standard engineering techniques, procedures, and criteria using judgment in making minor adaptations and modifications. Assignments have clear and specified objectives and require the investigation of a limited number of variables. Performance at this level requires developmental experience in a professional position or equivalent graduate level education.	As a fully competent engineer in all conventional aspects of the subject matter of the functional area of the assignments, plans and conducts work requiring judgment in the independent evaluation, selection, and substantial adaptation and modification of standard techniques, procedures, and criteria. Devises new approaches to problems encountered. Requires sufficient professional experience to assure competence as a fully trained worker, or, for positions primarily of a research nature, completion of all requirements for a doctoral degree may be substituted for experience.	Applies intensive and diversified knowledge of engineering principles and practices in broad areas of assignments and related fields. Makes decisions independently on engineering problems and methods, and represents the organization in conferences to resolve important questions and to plan and coordinate work. Requires the use of advanced techniques and the modification and extension of theories, precepts and practices of his field and related sciences and disciplines. The knowledge and expertise required for this level of work usually result from progressive experience.
Direction Received	Supervisor screens assignments for unusual or difficult problems and selects techniques and procedures to be applied on nonroutine work. Receives close supervision on new aspects of assignments.	Receives instructions on specific assignment objectives, complex features, and possible solutions. Assistance is furnished on unusual problems and work is reviewed for application of sound professional judgment.	Independently performs most assignments with instructions as to the general results expected. Receives technical guidance on unusual or complex problems and supervisory approval on proposed plans for projects.	Supervision and guidance relate largely to overall objectives. Critical issues, new concepts, and policy matters. Consults with supervisor concerning unusual problems and developments.
Typical Duties & Responsibilities	Using prescribed methods, performs specific and limited portions of a broader assignment of an experienced engineer. Applies standard practices and techniques in specific situations, adjusts and correlates data, recognizes discrepancies in results, and follows operations through a series of related detailed steps or processes.	Performs work which involves conventional types of plans, investigations, surveys, structures, or equipment with relatively few complex features for which there are precedents. Assignments usually include one or more of the following: Equipment design and development; test of materials; preparation of specifications; process study; research investigations; report preparation; and other activities of limited scope requiring knowledge of principles and techniques commonly employed in the specific narrow area of assignments.	Plans, schedules, conducts, or coordinates detailed phases of the engineering work in a part of a major project or in a total project of moderate scope. Performs work which involves conventional engineering practice but may include a variety of complex features such as conflicting design requirements, unsuitability of conventional materials, and difficult coordination requirements. Work requires a broad knowledge of precedents in the specialty area and a good knowledge of principles and practices of related specialties.	One or more of the following: (1) In a supervisory capacity, plans, develops, coordinates, and directs a large and important engineering project or a number of small projects with many complex features. A substantial portion of the work supervised is comparable to that described for engineer IV. (2) As individual researcher or worker, carries out complex or novel assignments requiring the development of new or improved techniques and procedures. Work is expected to result in the development of new or improved techniques and procedures. Work is expected to result in the development of new or refined equipment, materials, processes, products, and/or scientific methods. (3) As staff specialist, develops and evaluates plans and criteria for a variety of projects and activities to be carried out by others. Assesses the feasibility and soundness of proposed engineering evaluation tests, products, or equipment when necessary data are insufficient or confirmation by testing is advisable. Usually performs as a staff advisor and consultant as to a technical specialty, a type of facility or equipment, or a program function.
Responsibility for Direction of Others	May be assisted by a few aides or technicians.	May supervise or coordinate the work of draftsmen, technicians, and others who assist in specific assignments.	May supervise or coordinate the work of engineers, draftsmen, technicians, and others who assist in specific assignments.	Supervises, coordinates, and reviews the work of a small staff of engineers and technicians; estimates manpower needs and schedules and assigns work to meet completion date. Or, as individual researcher or staff specialist may be assisted on projects by other engineers or technicians.
Typical Position Titles	Junior Engineer, Associate, Detail Engineer, Engineer-in-Training, Asst. Research Engineer, Construction Inspector.	Engineer or Assistant Engineer, Project, Plant, Office, Design, Process, Research, Inspector, Engineering Instructor.	Engineer or Assistant Engineer, Resident, Project, Plant, Office, Design, Process, Research, Chief Inspector, Assistant Professor.	Senior or Principal Engineer, Resident, Project, Office, Design, Process, Research, Asst. Division Engineer, Associate Professor, Project Leader.
Education	Bachelor's Degree in engineering from an ECPD accredited curriculum, or equivalent, plus appropriate continuing education.			
Registration Status	Certified Engineer-in-Training.		Registered Professional Engineer.	
Typical Professional Attainments	Member of Professional and Technical Societies (Associate Grade or Equivalent).		Member of Professional Society (Member Grade). Member of Technical Society (Associate Grade or Equivalent).	Member of Technical Society (Member Grade). Publishes engineering papers, articles, textbooks, or

GRADE DESCRIPTIONS

Engineer VI	Engineer VII	Engineer VIII	Engineer IX
Has full technical responsibility for interpreting, organizing, executing, and coordinating assignments. Plans and develops engineering projects concerned with unique or controversial problems which have an important effect on major organization programs. This involves exploration of subject area, definition of scope and selection of problems for investigation, and development of novel concepts and approaches. Maintains liaison with individuals and units within or outside his organization with responsibility for acting independently on technical matters pertaining to his field. Work at this level usually requires extensive progressive experience.	Makes decisions and recommendations that are recognized as authoritative and have an important impact on extensive engineering activities. Initiates and maintains extensive contacts with key engineers and officials of other organizations and companies, requiring skill in persuasion and negotiation of critical issues. At this level individuals will have demonstrated creativity, foresight, and mature engineering judgment in anticipating and solving unprecedented engineering problems, determining program objectives and requirements, organizing programs and projects, and developing standards and guides for diverse engineering activities.	Makes decisions and recommendations that are recognized as authoritative and have a far-reaching impact on extensive engineering and related activities of the company. Negotiates critical and controversial issues with top level engineers and officers of other organizations and companies. Individuals at this level demonstrate a high degree of creativity, foresight, and mature judgment in planning, organizing, and guiding extensive engineering programs and activities of outstanding novelty and importance.	An engineer in this level is either (1) in charge of programs so extensive and complex as to require staff and resources of sizeable magnitude (e.g., research and development, a department of government responsible for extensive engineering programs, or the major component of an organization responsible for the engineering required to meet the objectives of the organization); or (2) is an individual researcher or consultant who is recognized as a national and/or international authority and leader in an area of engineering or scientific interest and investigation.
Supervision received is essentially administrative with assignments given in terms of broad general objectives and limits.	Supervision received is essentially administrative with assignments given in terms of broad general objectives and limits.	Receives general administrative direction.	
One or more of the following: (1) In a supervisory capacity (a) plans, develops, coordinates, and directs a number of large and important projects or a project of major scope and importance, or (b) is responsible for the entire engineering program of an organization when the program is of limited complexity and scope. The extent of his responsibilities generally require a few (3 to 5) subordinate supervisors or team leaders with at least one in a position comparable to level V. (2) As individual researcher or worker conceives, plans, and conducts research in problem areas of considerable scope and complexity. The problems must be approached through a series of complex and conceptually related studies, are difficult to define, require unconventional or novel approaches, and require sophisticated research techniques. Available guides and precedents contain critical gaps, are only partially related to the problem, or may be largely lacking due to the novel character of the project. At this level, the individual researcher generally will have contributed inventions, new designs, or techniques which are of material significance in the solution of important problems. (3) As a staff specialist serves as the technical specialist for the organization (division or company) in the application of advanced theories, concepts, principles, and processes for an assigned area of responsibility (i.e., subject matter, function, type of facility or equipment, or product). Keeps abreast of new scientific methods and developments affecting his organization for the purpose of recommending changes in emphasis of programs or new programs warranted by such developments.	One or both of the following: (1) In a supervisory capacity is responsible for (a) an important segment of the engineering program of a organization with extensive and diversified engineering requirements, or (b) the entire engineering program of an organization when it is more limited in scope. The overall engineering program contains critical problems the solution of which requires major technological advances and opens the way for extensive related development. The extent of his responsibilities generally requires several subordinate organizational segments or teams. Recommends facilities, personnel, and funds required to carry out programs which are directly related with and directed toward fulfillment of overall organization objectives. (2) As individual researcher and consultant is a recognized leader and authority in his organization in a broad area of specialization or in a narrow but intensely specialized field. Selects research problems to further the organization's objectives. Conceives and plans investigations of broad areas of considerable novelty and importance for which engineering precedents are lacking in areas critical to the overall engineering program. Is consulted extensively by associates and others with a high degree of reliance placed on his scientific interpretations and advice. Typically, will have contributed inventions, new designs, or techniques which are regarded as major advances in the field.	One or both of the following: (1) In a supervisory capacity is responsible for (a) an important segment of a very extensive and diversified highly engineering program, or, (b) the entire engineering program when the program is of moderate scope. The programs are of such complexity that they are of critical importance to overall objectives, include problems of extraordinary difficulty that often have resisted solution, and consist of several segments requiring subordinate supervisors. Is responsible for deciding the kind and extent of engineering and related programs needed for accomplishing the objectives of the organization, for choosing the scientific approaches, for planning and organizing facilities and programs, and for interpreting results. (2) As individual researcher and consultant, formulates and guides the attack on problems of exceptional difficulty and marked importance to the organization or industry. Problems are characterized by their lack of scientific precedents and source material, or lack of success of prior research and analysis so that their solution would represent an advance of great significance and importance. Performs advisory and consulting work for the organization as a recognized authority for broad program areas or in an intensely specialized area of considerable novelty and importance.	
Plans, organizes, and supervises the work of a staff of engineers and technicians. Evaluates progress of the staff and results obtained, and recommends major changes to achieve overall objectives. Or, as individual research or staff specialist may be assisted on individual projects by other engineers or technicians.	Directs several subordinate supervisors or team leaders, some of whom are in positions comparable to Engineer VI, or, as individual researcher and consultant, may be assisted on individual projects by other engineers and technicians.	Supervises several subordinate supervisors or team leaders, some of whose positions are comparable to Engineer VII, or individual researchers some of whose positions are comparable to Engineer VII and sometimes Engineer VIII. As an individual researcher and consultant may be assisted on individual projects by other engineers or technicians.	
Senior or Principal Engineer, Division or District Engineer, Production Engineer, Assistant Division, District or Chief Engineer, Consultant, Professor, City or County Engineer.	Principal Engineer, Division or District Engineer, Department Manager, Director or Assistant Director of Research, Consultant, Professor, Distinguished Professor or Department Head, Assistant Chief or Chief Engineer, City or County Engineer.	Chief Engineer, Bureau Engineer, Director of Research, Department Head or Dean, County Engineer, City Engineer, Director of Public Works, Senior Fellow, Senior Staff, Senior Advisor, Senior Consultant, Engineering Manager.	Director of Engineering, General Manager, Vice President, President, Partner, Dean, Director of Public Works.
makes presentations, gives lectures, provides training, etc.			

TABLE #1
ASCE GRADES / FEDERAL G.S. EQUIVALENTS

ASCE GRADES	FEDERAL G.S.
I/II	5-7
III	9
IV	11
V	12
VI	13
VII	14
VIII	15
IX	16 and above

State Codes for "Office Location"

(see page 1 of questionnaire)

1 Alabama
2 Alaska
3 Arizona
4 Arkansas
5 California
6 Colorado
7 Connecticut
8 Delaware
9 District of Columbia
10 Florida
11 Georgia
12 Hawaii
13 Idaho
14 Illinois
15 Indiana
16 Iowa
17 Kansas
18 Kentucky
19 Louisiana
20 Maine
21 Maryland
22 Massachusetts
23 Michigan
24 Minnesota
25 Mississippi
26 Missouri
27 Montana
28 Nebraska
29 Nevada
30 New Hampshire
31 New Jersey
32 New Mexico
33 New York
34 North Carolina
35 North Dakota
36 Ohio
37 Oklahoma
38 Oregon
39 Pennsylvania
40 Rhode Island
41 South Carolina
42 South Dakota
43 Tennessee
44 Texas
45 Utah
46 Vermont
47 Virginia
48 Washington
49 West Virginia
50 Wisconsin
51 Wyoming
52 Canal Zone
53 Guam
54 Puerto Rico
55 Virgin Islands

98 Outside the U.S. *with* APO
99 Outside the U.S. *without* APO